

# CHAMP

USU CONSORTIUM  
FOR HEALTH AND  
MILITARY PERFORMANCE



## Fueling the Human Weapon

# Overview



- **Energy-providing fuels**
- **CHO as a fundamental fuel**
- **Different types of fat**
- **Protein and requirements**
- **Alcohol as energy**
- **Portion control**





# Energy- Providing Fuels



- **One gram of...**
  - Carbohydrate (CHO) = 4 kcal**
  - Fat = 9 kcal**
  - Protein = 4 kcal**
  - Alcohol = 7 kcal**



# CHO: Fuel for Energy



- **Vital source of energy**
  - Two types: simple and complex
- **Complex CHO**
  - rice, fruits, seeds, potatoes, pasta, peas, beans, and vegetables
  - should not be restricted
- **Limit simple sugars**
  - table sugar, corn sweeteners, high-fructose corn syrup, honey, fruit sugars, brown sugar





# Fats: Fuels for Energy



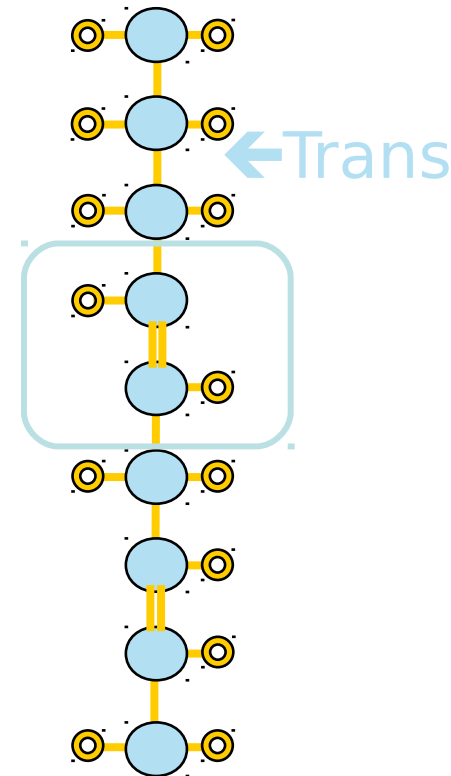
- **Fat is vital to life and should be consumed in moderation**
- **Mono- and polyunsaturated fats are preferred**
  - **Mono: olive, peanut, cashews, almonds**
  - **Poly: safflower, sesame, soy, corn and sunflowers, fish**



# Trans Fats Are Deadly!



- **Trans Fats or “partially hydrogenated” fats must be avoided:**
  - **Man-made by changing other fats**
  - **Found in cookies, crackers, other commercial baked goods, french fries, donuts, fried onion rings**





# Protein: Fuel for Structure



- **Protein (PRO) is needed for structure and function**
- **PRO is not a main source of energy ( $< 10\%$ ), like CHO and Fat**
- **Protein needs are determined by age, body weight, and activity level.**
- **Excess protein is converted and stored as fat**
- **Large quantities of protein strain the liver and kidneys**



# Grams of Protein Needed



<b>Activity Level</b>	<b>Protein Range (grams/pound)</b>
<b>Low to Moderate</b>	<b>0.4 to 0.5</b>
<b>Endurance Training</b>	<b>0.6 to 0.9</b>
<b>Strength</b>	<b>0.6 to 0.9</b>



# Calculating Protein Needs



- **Example:**
  - **180 lb SOF is training for mission requiring endurance and strength.**

**Protein needs =  $0.6 \times 180 \text{ lbs} = 108$  grams**

**Protein needs =  $0.9 \times 180 \text{ lbs} = 162$  grams**

**Protein needs range =  $108 - 162 \text{ g/day}$ .**



# Calculating Protein Needs



## Calculating Your Daily Protein Needs

Enter body weight



**155**

lbs

Enter Activity Level



Strength



Your protein needs are between  
**93 g** and **140 g**

# **Alcohol: Poor Fuel for Energy**



- **Poor source of energy**
- **Amount of alcohol consumed should be limited to appropriate amount:**
  - **Men: 2 drinks per day**
  - **Women: 1 drink per day**
- **Typically unhealthy foods are consumed with alcohol**
  - **This leads to unnecessary weight gain**
- **Prevents deep, restorative sleep**





Alcoholic Beverages	Beverage Serving Size (ounces)	Number of Servings per Beverage	Calories
Beer	12	1	150
Light beer	12	1	110
Dark beer	12	1	168
Non-alcoholic beer	12	1	70
Distilled spirits (Scotch, vodka, bourbon, gin etc.)	1.5	1	100
Dry dessert wine***	5	1	198
Sweet dessert wine***	5	1	344
Red wine***	5	1	105
White wine***	5	1	100
Sparkling white wine***	5	1	106
Amaretto sour** (Sweet and sour mix, almond amaretto liqueur, tequila, orange juice)	6	4	421
B-52** (Kahlua coffee liqueur, amaretto almond liqueur, Bailey's Irish Cream)	1.5	1	91
Bloody Mary** (Vodka, tomato juice, lemon juice, Worcestershire sauce, Tabasco sauce, lime)	4.6	1	120
Chocolate martini** (Vodka, Creme de Cacao)	2.5	1.67	188
Cosmopolitan** (Vodka, Triple Sec, Rose's lime juice, cranberry juice)	2.5	1.67	131
Daiquiri** (Light rum, limes, powdered sugar)	2.7	1	137
Gin and tonic** (Gin, tonic water, lime)	7	1.33	189
Hurricane** (Dark rum, light rum, orange juice, pineapple juice, Grenadine, 151 proof rum, cherries, pineapple and sugar	10.4	3	384



## Be aware of portion sizes

**Clenched Fist**  
= 8 fl oz.

**Baseball**  
= 1 cup

**Tennis Ball**  
= 1/2 cup

**Checkbook**  
= 3 ounces

**Ping Pong Ball**  
= 1 Tablespoon

**Beverages**

**Breakfast Cereals**  
**Soup**  
**Green Salads**  
**Chinese Food**

**Beans Tomato or**  
**Spaghetti Sauce**  
**Mashed Potato**  
**Fruit Salad**  
**Apple Sauce**

**Meats**  
**Canned Fish**

**Peanut Butter**  
**Cream Cheese**  
**Mayonnaise**  
**Sour Cream**  
**Salad Dressing**

# Key Points



- **CHO are a vital fuel for:**
  - Endurance and resistance activities, competitive athletic events, mental agility, and healthy living
- **Fat is essential but should contribute fewer calories than CHO**
- **Protein in excess is converted to fat**
  - Eat in moderation
- **Alcohol is nonessential and adds “empty calories”**
- **Be aware of serving portions for snacks and meals to maintain a healthy weight**

